WHAT IS CLAIMED IS:

1. A stop control apparatus for an internal combustion engine, comprising:

a valve mechanism for operating at least one of an intake valve and an exhaust valve independently of an output shaft of the internal combustion engine; and

a valve controlling device for controlling the operation of the valve mechanism so that the internal combustion engine is stopped in a predetermined state.

2. The stop control apparatus of the internal combustion engine according to claim 1, wherein the internal combustion engine is used as a driving source of a vehicle, the vehicle is capable of generating regenerative power by driving an electric generator using kinetic energy at the time of deceleration, the valve mechanism is capable of driving both the intake valve and the exhaust valve, and the valve controlling device controls the operation of the valve mechanism so that the intake valve and the exhaust valve are closed during execution of the regenerative power generation, and that the internal combustion engine is stopped after the intake valve or the exhaust valve are opened to release compression pressure of the internal combustion engine, as in the predetermined state, when the internal combustion engine is stopped successively from the state that the regenerative power generation is executed.

3. The stop control apparatus of the internal combustion engine according to claim 2, wherein when the internal combustion engine is stopped successively from the state where the regenerative power generation is executed, the valve controlling device maintains the intake valve and the exhaust valve in a closed state until burning of air-fuel mixture sealed in a cylinder of the internal combustion engine is ended, and controls the operation of the valve mechanism so that the intake valve or the exhaust valve is opened after the burning is ended.

4. The stop control apparatus of the internal combustion engine according to claim 1, wherein the internal combustion engine is provided with a plurality of cylinders in such a manner that timings of compression strokes of the cylinders are deviated from each other, and the valve controlling device controls the operation of the valve mechanism so that the internal combustion engine is stopped, as in the predetermined state, when a rotational position of the output shaft is within a specified range in a part of a rotating range of the output shaft.

5. The stop control apparatus of the internal combustion engine according to claim 4, wherein the valve controlling device controls a compression workload to be generated in a compression stroke during a process of stopping the internal combustion engine correspondingly to the rotational position of the output shaft during the process of stopping the internal combustion engine, to thereby stop the internal combustion engine when the output

shaft is within the specified range.

6. The stop control apparatus of the internal combustion engine according to claim 4, wherein the valve controlling device controls the operation of the valve mechanism so that a compression workload in at least one specific cylinder of the cylinders becomes larger than a compression workload in the other cylinders, to thereby stop the internal combustion engine when the output shaft is within the specified range.

7. The stop control apparatus of the internal combustion engine according to claim 5, wherein the valve controlling device controls the operation of the valve mechanism so that the compression workload generated in the process of stopping the internal combustion engine is gradually reduced.

8. The stop control apparatus of the internal combustion engine according to claim 6, wherein the valve controlling device controls the operation of the valve mechanism so that the compression workload generated in the process of stopping the internal combustion engine is gradually reduced.

9. The stop control apparatus of the internal combustion engine according to claim 4, further comprising a stop position setting device for detecting a state of the internal combustion engine at the time of start and for setting the specified range based on a detected state.

10. The stop control apparatus of the internal combustion engine according to claim 9, wherein the stop position setting device detects information correlated with the compression workload at the time of start as the state of the start, and sets the specified range based on a detected information so that the internal combustion engine is stopped in a state that a cylinder of the cylinders where the compression workload at the time of start is relatively smaller than the other cylinders is in the compression stroke.